

PREVENTION OPPORTUNITIES UNDER THE BIG SKY

TUBERCULOSIS: REPORTED CASES AND THE CONTROL PROGRAM IN MONTANA

Tuberculosis (TB) is a serious, infectious disease which usually involves the lungs but can attack any organ in the body. In the mid-20th Century hundreds of cases of TB were reported in Montana every year (e.g., from 1950 to 1955 an average of 374 cases annually). In 2006, only 13 cases were reported. This dramatic decrease, from a case every day to a case per month on average, is a tremendous public health success story but there is no room for complacency. Persons can have latent TB infection (LTBI) for long periods before having TB disease. Without treatment, 5 to 10% of immunocompetent persons with LTBI will develop active TB disease; immunocompromised persons with LTBI have even higher risk for disease¹. Diagnosing and treating persons with LTBI is essential part of TB control. This issue of *Montana Public Health* describes TB in Montana, and important aspects of TB control activities (including a recently approved test to identify LTBI cases now available at the Montana Public Health Laboratory)².

Tuberculosis Disease In Montana From 1995 to 2000 an average of 18 TB cases per year were reported; since 2001 the annual average, has been 14 cases. About half of the cases in each of these time periods were American Indians. In 2006, 13 cases were reported. These cases ranged in age from 20 to 82 (median 46 years). One of these cases had multiple-drug resistant TB. Ten of the cases had pulmonary TB for which 250 close contacts were skin tested to identify persons who may have been infected. Since 2001 in the U.S. more than half of all reported cases have been in foreign born persons³; in 2006, six (46%) of the Montana cases were foreign born.

TB Control Identifying and treating persons with LTBI is an essential part of TB control. When a case of TB disease is identified, close contacts of that case need to be found and tested. Timely reporting of cases by clinicians to the local public health department is fundamental to this control strategy. In addition to close contacts of cases, persons in certain high risk groups should be tested for LTBI. (Table 1)

Testing for LTBI For many years the Mantoux tuberculin skin test (TST) has been the standard method to identify persons with TB infection but not yet with TB disease. The TST illicitly a delayed hypersensitivity reaction to TB antigens in persons with LTBI. However, a reaction can also be illicitly to antigens from non-TB mycobacteria leading to false positive TST results. An alternate test, QuantiFERON® - Gold (QFT), has been approved by the FDA and will soon be available through the Montana Public Health Laboratory. [NOTE: Notice of availability of this test will be sent to health care providers in early 2008.] The QFT detects interferon gamma produced by t-lymphocytes from TB-sensitized persons. Although this test helps distinguish infection with TB from false positive

skin tests due to BCG vaccination, clinicians should not rely solely on either this test or the skin test to make a definitive diagnosis. (Table 2)

TABLE 1: Persons to test for LTBI*

- | Person who may have been recently infected, including | Person with clinical conditions associated with progression of LTBI to TB Disease, including |
|--|---|
| <ul style="list-style-type: none"> ▪ Close contacts of persons with active TB disease ▪ Persons who work or live in settings where TB exposure may occur (e.g., hospitals, prisons, homeless shelters) ▪ Persons who have immigrated within the past 5 years from areas with high TB rates* | <ul style="list-style-type: none"> ▪ Persons with HIV infection (as soon as possible after diagnosis and annually thereafter) ▪ Injection drug users ▪ Persons with silicosis, chronic renal failure, diabetes, gastrectomy/jejunoileal bypass, some cancers ▪ Persons with evidence of old, healed TB lesions on chest x-ray |

*This table provides examples; also see reference 4.

TABLE 2: Comparison of blood-based testing and skin testing for diagnosing LTBI

QuantiFERON® – TB Gold

- TB-specific antigens used with blood sample in laboratory
- No boosting; 2-step testing not needed
- Not cross reactive with BCG or most other non-TB mycobacteria
- Objective interpretation
- Estimated sensitivity 75-90%
- 1 patient visit
- Ability to predict risk of progression to TB disease not yet determined

Tuberculosis Skin Test

- Less specific PPD antigen used in patient's skin
- Boosting with repeat testing
- Cross reactive with BCG
- Interpretation requires knowing patient's relative risk for TB exposure
- Estimated sensitivity 75-90%
- 2 patient visits minimum
- Ability to predict risk of progression to TB disease in high-risk groups extensively studied

The Montana TB Control Program The Montana TB Control Program conducts surveillance for TB and works closely with local health departments, and health care providers throughout the state. The program's primary goals are to assure timely and effective treatment for cases of TB disease, and timely identification and effective treatment of persons with LTBI. (Table 1) The program develops and disseminates policies and guidelines related to TB control.

Montana is among states in the U.S. with relatively low incidence of TB disease. The program Director has played a substantial role (along with TB program directors from some other low incidence states, the Centers for Disease Control and Prevention, the Francis J. Curry National Tuberculosis Center, and the National Jewish Medical Center) in developing a manual for TB control in low incidence areas. This manual was published in 2007 and is available at the program's web site.⁴

Recommendations for control of TB transmission:

TB Disease

- THINK TB if symptoms (prolonged cough, chest pain, fever, night sweats, weight loss, malaise), and history and/or risk factors are present (recent exposure, positive TST, foreign born, travel history [see countries below] homeless, substance abuse)
- Cases occur in all areas of the state

Latent TB Infection

- Current CDC/ATS guidelines focus testing of those at highest risk for recent LTBI or clinical conditions that increase risk for disease progression; testing of low-risk persons/groups is discouraged
- Foreign-born persons from high-risk countries should be tested and treated if infected; this includes persons who have received BCG and are TST or QFT positive and children adopted from high-risk regions
- Countries with high incidence of TB – countries in **Asia, Africa, Latin America, and Eastern Europe** – have TB rates 5 to 30 times higher than US rates, and an increasing percentage of TB cases in the US are occurring among immigrants from these countries
- 9 months of INH is preferred regimen for treatment of LTBI
- Strongly consider treating all persons with LTBI, regardless of age – A decision to test is a decision to treat!

For more information, contact your local health department or the State TB Control Program, Denise Ingman at, 406-444-0275, dingman@mt.gov. This program facilitates access to the TB Expert Physician Warmline, as well.

References:

1. CDC. Targeted tuberculin testing and treatment of latent Tuberculosis infection. MMWR. 2000;49(RR-6):1-51.
2. CDC. Guidelines for using the QuantiFERON® - TB Gold Test for detecting *Mycobacterium tuberculosis* infection, United States. MMWR. 2005;54(RR-15):49-55.
3. CDC. Reported Tuberculosis in the United States, 2001. Atlanta, GA:U.S. Department of Health and Human Services, CDC, September 2002
4. <http://www.dphhs.mt.gov/PHSD/epidemiology/commun-disease-epi-tuberculosis>

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